

What is claimed is:

1. A T-shaped gauge comprising:

first to third probe rods fixed at three positions of the pelvis;

5 a T-shaped supporter slidably connected to the probe rods to change the first plane formed by the three positions, the T-shaped supporter being supported from the first plane to a predetermined height by the probe rods;

a first dynamic reference base separably mounted at a portion of the T-shaped supporter, the first dynamic reference base emitting light to indicate the first
10 plane; and

a moving part moved symmetrically from the T-shaped supporter by the first and second probe rods.

2. The T-shaped gauge according to claim 1, wherein the T-shaped
15 supporter includes: first and second guide bars of predetermined widths, the guide bars being formed at the coaxial line on the second plane and extending from the center point toward both sides thereof by predetermined lengths; and

a third guide bar of a predetermined width located on the same plane as the first and second guide bars at right angles to the first and second guide bars on the
20 second plane, the third guide bar extending from the center point by a predetermined length.

3. The T-shaped gauge according to claim 2, wherein the first, second and third guide bars correspond to the probe rods along an axis directing the center

point from ends thereof, and respectively have first to third guide grooves of predetermined widths and lengths.

4. The T-shaped gauge according to claim 3, wherein the third guide bar
5 further includes a second guide groove of predetermined width and length formed between the third guide groove and the center point.

5. The T-shaped gauge according to claim 4, wherein the moving part includes:

10 a transfer fragment mounted in the second guide groove and reciprocating axially;

a first link for connecting the first probe rod coupled to the guide groove of the first guide bar and the transfer fragment; and

a second link for connecting the second probe rod coupled to the guide
15 groove of the second guide bar and the transfer fragment.

6. The T-shaped gauge according to claim 1, wherein the first dynamic reference base includes:

a fixing member having an end separably mounted to the T-shaped
20 supporter;

a cross-shaped flat plate connected to the other end of the fixing member;
and

light generators mounted at ends of the flat plate respectively for emitting
light.

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7. An acetabular cup navigation system using a T-shaped gauge comprising:

a T-shaped gauge for measuring anatomical landmarks of the pelvis at the same time;

5 a first dynamic reference base fixed at the first position of the pelvis for indicating a position of the pelvis by emitting light;

an acetabular cup positioner fixed at the second position of the pelvis for indicating a position of an acetabular cup;

10 a photodetector for detecting light emitted from the T-shaped gauge, light emitted from the first dynamic reference base, and light emitted from the acetabular cup positioner; and

a controller for producing an anterior pelvic plane from the first detection signal, which is outputted from the photodetector and made by the light emitted from the T-shaped gauge, producing a pelvic reference frame from the second detection signal by the light emitted from the first dynamic reference base, and producing a direction vector of the acetabular cup positioner by the light emitted from the acetabular cup positioner.

8. The acetabular cup navigation system according to claim 7, further comprising a display for displaying the anterior pelvic plane, the pelvic reference frame, and the direction vector of the acetabular cup outputted from the controller.

9. The acetabular cup navigation system according to claim 7, wherein the T-shaped gauge includes:

25 first to third probe rods fixed at three positions of the pelvis;

a T-shaped supporter slidably connected to the probe rods to change the first plane formed by the three positions, the T-shaped supporter being supported from the first plane to a predetermined height by the probe rods;

5 a second dynamic reference base separably mounted at a portion of the T-shaped supporter, the first dynamic reference base emitting light to indicate the first plane; and

a moving part moved symmetrically from the T-shaped supporter by the first and second probe rods.

10 10. The acetabular cup navigation system according to claim 9, wherein the T-shaped supporter includes: first and second guide bars of predetermined widths, the guide bars being formed at the coaxial line on the second plane and extending from the center point toward both sides thereof by a predetermined length; and

15 a third guide bar of a predetermined width located on the same plane as the first and second guide bars at right angles to the first and second guide bars on the second plane, the third guide bar extending from the center point by a predetermined length.

20 11. The acetabular cup navigation system according to claim 10, wherein the first, second and third guide bars correspond to the probe rods along an axis directing the center point from ends thereof, and respectively have first to third guide grooves of predetermined widths and lengths.

12. The acetabular cup navigation system according to claim 11, wherein the third guide bar further includes a second guide groove of predetermined width and length formed between the third guide groove and the center point.

5 13. The acetabular cup navigation system according to claim 12, wherein the moving part includes:

 a transfer fragment mounted in the second guide groove and reciprocating axially;

 a first link for connecting the first probe rod coupled to the guide groove of
10 the first guide bar and the transfer fragment; and

 a second link for connecting the second probe rod coupled to the guide groove of the second guide bar and the transfer fragment.

15 14. The acetabular cup navigation system according to claim 9, wherein the second dynamic reference base includes:

 a fixing member having an end separably mounted to the T-shaped supporter;

 a cross-shaped flat plate connected to the other end of the fixing member;
and

20 light generators mounted at ends of the flat plate respectively for emitting light.

 15. The acetabular cup navigation system according to claim 9, wherein the first dynamic reference base includes:

a fixing member having an end separably mounted to the T-shaped supporter;

a cross-shaped flat plate connected to the other end of the fixing member;
and

5 light generators mounted at ends of the flat plate respectively for emitting light.

16. The acetabular cup navigation system according to claim 7, wherein the acetabular cup positioner includes:

10 a third dynamic reference base for emitting light;
an acetabular cup fixing part for fixing the acetabular cup; and
a fixing part for fixing the acetabular cup fixing part in integration with the third dynamic reference base,

wherein the third dynamic reference base includes:

15 a fixing member having an end separably adhered on a portion of the fixing part;

a cross-shaped flat plate connected to the other end of the fixing member;
and

light generators adhered at ends of the flat plate for emitting light.

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17. An acetabular cup aligning method using a T-shaped gauge comprising the steps of:

calculating an anterior pelvic plane from anatomical landmarks of the pelvis;

25 calculating a pelvic reference frame by a position of the pelvis;

converting the anterior pelvic plane based on the pelvic reference frame and producing a converted anterior pelvic plane; and

setting a previously obtained direction vector of an acetabular cup on the converted anterior pelvic plane.

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